BULLETIN

OF THE INSTITUTE OF METALS

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INSTITUTE NEWS

Representation of the Admiralty on the Council

Captain W. R. STEWART, R.N., has succeeded Captain K. H. SMITH, R.N., as the representative of the Lords Commissioners of the Admiralty at meetings of the Council of the Institute.

PERSONAL NOTES

MR. R. D. BERRY has left D. Napier and Son, Ltd., to take up an appointment as a Research Metallurgist with The Mond Nickel Co., Ltd., Precious Metals Development and Research Division, Acton.

MR. E. A. BOLTON has been appointed Technical Manager, Copper Products, Imperial Chemical Industries, Ltd., Metals Division, Birmingham.

DR. L. A. CARAPELLA has been appointed Vice-President of Sylvania–Corning Nuclear Corp., Bayside, L.I.

Dr. A. T. CHURCHMAN has left the A.E.I. Research Laboratories to become Head of the Reactor Materials Group in the Research and Development Department of the Central Electricity Generating Board, Berkeley, Glos.

SIR JOHN COCKCROFT has been awarded the honorary degree of Doctor of Technical Sciences by the Technical University, Delft.

MR. D. K. COUTTS has been appointed Managing Director of the Nickel Information Bureau Pty., Ltd., recently established in Melbourne.

DR. E. C. ELLWOOD, Chief Metallurgist of the Tin Research Institute, has been appointed Professor of Metallurgy in the Royal Technical College, Glasgow, in succession to Professor R. Hay.

MR. V. C. FAULKNER, Editor of *Foundry Trade Journal*, has been elected an Honorary Member of the Association Technique de Fonderie.

MR. F. A. GREEN has left the Battersea College of Technology and taken up an appointment with the Glacier Metal Co., Ltd., Kilmarnock.

MR. J. M. GRUITCH, Director of Defence Products of the American Car and Foundry Division, ACF Industries Inc., has been appointed Chairman of the American Ordnance Association's Production Techniques Division.

MR. O. J. HANSON is now metallurgist with Wilkinson Sword Ltd., Acton.

DR. J. B. HAWORTH has been appointed Technical Assistant to the Sales Manager, Freeport Nickel Co., New York.

MR. C. J. HUFFMAN has been appointed Technical Director, R. D. Werner Co., Inc., Greenville, Pa. He was previously with the Kaiser Aluminum and Chemical Corp.

DR. H. KRAINER has left Gebr. Böhler A.G., Kapfenberg, to join the research department of Fried. Krupp, Essen.

MR. J. H. LINGARD has been appointed Assistant Metallurgical Manager, Davy British Oxygen Co., Ltd., Harlow, Essex.

DR. P. E. PRICE has left the Massachusetts Institute of Technology and taken up an appointment as research metallurgist with the Allegheny Ludlum Steel Corp., Brackenridge, Pa.

DR. T. LL. RICHARDS has left Imperial Chemical Industries, Ltd., Metals Division, on his appointment as Reader in Physical Metallurgy at the Birmingham College of Technology.

DR. HOWARD WORNER, Director of Research of Broken Hill Pty. Co., Ltd., is planning to visit works and research establishments in Europe and America between April and July and hopes to attend the Spring Meeting.

Death

The Editor regrets to announce the death of:

MR. JOHN SPILMAN WALTON, of High Duty Alloys, Ltd., on 1 December 1958. He was Chairman of the South Wales Local Section in 1954–56 and served for a number of years on the Metallurgical Engineering Committee.

OBITUARY

Professor A. Preece

Archibald Preece, William Cochrane Professor of Metallurgy at King's College, Newcastle, in the University of Durham, died on 13 November, 1958, at the age of 53. Born in Wales, he took his initial degree at Swansea in 1926 and returned there two years later, from the Pressed Steel Company of Great Britain, to work as a research assistant to Professor C. A. Edwards. In 1933 he was appointed to a lectureship in

the University of Leeds, where his work for the Department of Coal Gas and Fuel Industries with Metallurgy was recognized by his subsequent appointment to a readership. He was President of the Leeds Metallurgical Society in 1947 and in the following year was awarded the Sir Robert Hadfield Medal of the Iron and Steel Institute, " in recognition of his researches on the scaling and on the overheating and burning of steel ". The same year, 1948, saw him move to the William Cochrane Chair at Newcastle, which position he held until his untimely death.

Preece was a man of immense modesty and great charm, as has been evident by the deep sorrow into which his many friends have been plunged by the news of his death. Although his training was in science he was, in many respects, a humanist, and as a result of this he was able to teach by example and encouragement. These and many other of his characteristics led many to ask for his time to be spent with them in committee and counsel, and it was typical of the man that he never refused such a request, no matter how humble its source, and even though it meant a greater burden upon what was, towards the end, a frail structure. Less than a month before his death, although by then a very sick man, he was in the University attending to his duties as Dean of the Faculty of Applied Science and Head of the Department of Metallurgy.

The years which Preece spent at Newcastle saw, portrayed in the developments within his own Department, the changing pattern of the Universities of this country. In staff and student numbers and in research activities, he watched over a continuing expansion with care and with understanding of the problems of others. It was fitting that his quiet labours to rehouse the Department in new laboratories eventually met with success, although he had little time in which to enjoy the fruits of these labours in the twelve months that were left for him to live. To those who had the privilege to know him, it was to be expected that he would spend this time attending to the needs of others.

As a scientist Preece was a careful and methodical experimentalist and, in his later years, his great regret was that his many other duties left him no time for work at the bench. The greater part of his published work was upon the effect of high temperatures upon metals, and particularly on the kinetics and mechanism of scaling. He was a member of many metallurgical societies, some of which he served in an official capacity, while the committees of various research organizations also benefited from his membership.

His widow and son, who survive him, may find some comfort in the knowledge of the service and goodness with which his relatively short life was filled.

R. N. Parkins

Dr. J. A. Smythe

The death occurred in Newcastle on 12 December of Dr. J. A. Smythe, a member of the Institute for many years and Chairman of the North East Coast Local Section in 1928.

Smythe took his initial degree at Armstrong College (now King's College) in the University of Durham, and returned there after taking his Ph.D. at Göttingen. He was appointed William Cochrane Lecturer and Head of the Department of Metallurgy in the University of Durham in 1924, and in 1939 he became Reader in Metallurgy, which title he held until his retirement in 1945.

His researches ranged widely and, apart from his eminence as a geologist, he was an authority on the metallurgy of lead, in which field he continued to work until recent times and about which he wrote a book, in the classical vein, published in 1923. He was an authority on Roman lead and on other metals of antiquity and he was the co-author, with C. E. Pearson, of a number of original papers on the extrusion of metals published in the *Journal*.

Smythe had the gift of passing on his enthusiasm for his subject to his students, a fact which they never forgot and for which they have recently expressed their gratitude by establishing an undergraduate prize bearing his name.

R. N. Parkins

POWDER METALLURGY JOINT GROUP

" Theoretical Aspects of Sintering "

The next meeting of the Powder Metallurgy Joint Group will be held at Church House, Westminster, on Wednesday, 29 April, 1959, *not* on Thursday, 12 March, as previously announced. The meeting will take the form of a discussion on " Theoretical Aspects of Sintering " and will be based on several review papers, to be published in the next issue of *Powder Metallurgy*.

Conversazione and Exhibition

A conversazione will be held on the evening of the meeting at 17 Belgrave Square, London, S.W.1, at which it is hoped to arrange a small exhibition of specimens, apparatus, photographs, &c., relevant to sintering. Any individual, research organization, or industrial concern able to offer an exhibit is asked to communicate with the Secretary, Powder Metallurgy Joint Group, 17 Belgrave Square, London, S.W.1.

LETTERS TO THE EDITOR

The Constitution of Cadmium–Tin–Zinc Alloys

The work reported by Dr. Bray on the constitution of tin–cadmium–zinc alloys [1] is of particular interest to the Birmingham laboratories, since it is, apart from the determination of the liquidus surfaces, very similar in conception, execution, and results to experiments carried out by Dr. H. W. Rayson in my Department some years ago. This work, which established the constitution of the tin-rich alloys of the ternary system at 156° and 145° C. and also the extent of the solubility of zinc in the tin–cadmium β phase (0·7 at.-% at 156° C.), was fully described by Dr. Rayson in an M.Sc. thesis presented in May 1952.

Dr. Bray's remarks on the tin–cadmium–bismuth system again follow our earlier experience. The Ph.D. thesis presented by Dr. Rayson in October 1953 contains a detailed account of the constitution of this system. The solubility of bismuth in the tin–cadmium β phase was shown to extend to approximately 9 at.-% bismuth at 125° C. Since this temperature is below that of the eutectoidal decomposition of the binary β phase, the single-phase ternary β field is separated from the tin–cadmium axis of the isothermal section by the $(\alpha + \beta + \gamma)$ and $(\alpha + \gamma)$ fields. The minimum bismuth content of the ternary phase at 125° C. is approximately 4·7 at.-%. The solution of bismuth in the tin–cadmium β phase takes place so as to maintain an electron : atom ratio close to that characteristic of the binary β phase itself. At 100° C. the ternary β phase, containing appreciable quantities of bismuth,

is still present. After annealing at 85° C., however, only the α, γ, and bismuth-rich phases are observed. Resistance/temperature measurements, at a heating rate of 10° C. per day, defined the temperature of the eutectoidal decomposition of the ternary β phase containing bismuth as 86° ± 1° C. It was found that thermal analysis gave a heavily supercooled arrest corresponding to this decomposition at 78° C.; Dr. Bray's assessment of ~70° C. for the eutectoid temperature thus doubtless stems from a similarly supercooled thermal arrest.

Dr. Rayson's work, together with that of Dr. Goulding on the tin–cadmium–thallium and tin–indium–antimony systems, is summarized in a paper now in the press, which was submitted to *Metallurgia* on 13 May 1957, and which should appear shortly.

G. V. Raynor

Department of Physical Metallurgy,
University of Birmingham.

It is unfortunate that no reference to Dr. Rayson's thesis appears in my paper. This thesis was available to me for consultation during the preparation of my work for publication, and I would like to add this fact to the acknowledgments already made.

H. J. Bray

College of Science and Technology,
Manchester.

REFERENCE

1. H. J. Bray, *J. Inst. Metals*, 1958–59, **87**, (2), 49.

OTHER NEWS

"Plasticity of Production Processes"

A short postgraduate course on the "Plasticity of Production Processes" is to be held between 20 April and 8 May at the Department of Mechanical Engineering, City and Guilds College, London, S.W.7. It will be under the general direction of Dr. J. M. Alexander.

The course will consist of about 37 lectures and 20 demonstration or tutorial periods. In essence the course will be devoted to consideration of the basic fundamentals of plasticity theory and their application to the important metal-working processes. Consideration will also be given to the more recent theoretical and experimental researches in this field, and lectures will be given by several experts from Industry.

The demonstration periods are intended to provide opportunities for illustrating the various topics covered in the lectures. Typical examples will be chosen from the tests developed at the College for determining extended stress/strain curves, determination of the interior distortion of test-pieces, and industrial procedures such as cupping and Erichsen tests. Demonstrations or descriptions of the control systems for rolling mills and numerically controlled machine tools will also be arranged.

To provide opportunity for those attending the course to obtain practice in manipulating the various analytical techniques described, a number of tutorial periods have been allotted during which questions having a practical bias will be set. There will be ample opportunity during these periods for discussion and elaboration of the lectures.

Further information and forms of application may be obtained from the Registrar, Imperial College of Science and Technology, London, S.W.7. The fee for the full-time course will be twenty-five guineas.

The number attending the course will be limited to 30. Possession of a university degree or equivalent qualification would be an advantage.

Summer School on Physics of the Solid State

With the support of the Ford Foundation, the Department of Physics of the University of Cambridge will hold in July and August 1959, beginning on 15 July, an international summer school on physics of the solid state. This will be similar in conception to the school held in Paris in 1958. The lectures and demonstrations will be held in the Cavendish Laboratory, and it is hoped that those attending will be accommodated in colleges of the university (married students in hotels).

The subject-matter of the summer school will be "Defects in Crystalline Solids", in particular (i) methods of observation; electron microscopy and X-ray techniques; (ii) dislocations and point defects; (iii) radiation damage by neutrons and fast particle bombardment; and (iv) plastic deformation, creep and fatigue. There will be demonstrations of modern equipment of various kinds.

It is hoped that the following members of the Departments of Physics and Metallurgy of the University of Cambridge will take part: Professor N. F. Mott, Professor A. H. Cottrell, Dr. F. P. Bowden, Dr. V. E. Cosslett, Dr. P. B. Hirsch, Dr. J. Nutting. In addition lecturers from the United States, Europe and elsewhere will contribute.

The course will last for four weeks (15 July–13 August), and there will be about three lectures and discussions a day. In the evenings there will be available certain lectures of general cultural value. Libraries and writing rooms will be made available to students.

The level of the course will be suitable for students beginning research for a doctorate. The instruction will be in English.

About 60 students will be admitted, of whom not less than 40 will be normally resident outside Great Britain. Reasonable travelling expenses and living expenses at the rate of £2 per day will be available to students selected.

Applications giving the following details should reach Mr. E. H. K. Dibden, Secretary to the Department of Physics, Cavendish Laboratory, Free School Lane, Cambridge, by not later than 1 April 1959: (i) full name, (ii) age, (iii) address, (iv) nationality, (v) marital status; married students should indicate if their wives will accompany them, (vi) details of academic career, and (vii) names and addresses of two referees who are acquainted with the applicant's work. Successful applicants will be notified by 30 April 1959.

"Co-operative Phenomena and Phase Transitions"

Under the auspices of the Physical Society, it is proposed to hold a conference on "Co-operative Phenomena and Phase Transitions" at the University of Durham on 6 and 7 July 1959. The subjects which will be discussed include: the statistical mechanics of interacting systems (classical and quantal), the Ising model, the Heisenberg model, and theoretical and experimental work on the nature of phase transitions (critical behaviour, melting, λ-point transitions of various types).

The main purpose of the Conference is to enable research workers to learn of recent progress and developments in the field. It is not at present expected that a special publication will be made of conference proceedings, but papers will be submitted to scientific journals in the normal way.

To help the planning committee with the organization of the various sessions, intending participants are asked to give as much advance notice as possible of contributions which they intend to make. These should be sent to: Dr. I. D. C. Gurney, Physics Department, King's College, Newcastle-upon-Tyne 1, to whom any further queries and suggestions about the Conference should also be referred.

DIARY

The Institute

14–16 April. Spring Meeting, Church House, Great Smith Street, London, S.W.1.

14 April. May Lecture by Professor Fred Hoyle. (Royal Institution, Albemarle Street, W.1, at 7.0 p.m.)

Powder Metallurgy Joint Group

29 April. Informal Discussion on "Theoretical Aspects of Sintering". (Church House, Great Smith Street, London, S.W.1, at 9.30 a.m.)

Local Sections and Associated Societies

2 April. Leeds Metallurgical Society. "Special Steel Manufacture", by D. Hall. (Meeting at the Works of the Low Moor Alloy Steel Co., Ltd., Bradford, at 7.15 p.m. The meeting includes a visit to the Works.)

7 April. East Midlands Metallurgical Society. Annual General Meeting followed by "Metallurgical Examination of Failures", by G. A. Cottell. (Electricity Demonstration Theatre, Carrington Street, Nottingham, at 7.30 p.m.)

7 April. Oxford Local Section. Annual General Meeting followed by a Colloquium on "Modern Joining Techniques: (*a*) Electron Bombardment; (*b*) Ultrasonic Applications; (*c*) Non-Metallic Bonding". (Cadena Café, Cornmarket Street, Oxford, at 7.0 p.m.)

9 April. Liverpool Metallurgical Society. "Boron in Steel", by F. B. Pickering. Followed by the Annual General Meeting. (Library of the Department of Metallurgy, The University, 146 Brownlow Hill, Liverpool 3, at 7.0 p.m.)

9 April. London Local Section. Annual General Meeting followed by a lecture.

23 April. North East Metallurgical Society. Annual General Meeting. (Cleveland Scientific and Technical Institution, Corporation Road, Middlesbrough, at 7.15 p.m.)

30 April. Sheffield Local Section. Chairman's Address by Professor R. W. K. Honeycombe. (Engineering Lecture Theatre, The University, St. George's Square, Sheffield 1, at 7.30 p.m.)

APPOINTMENTS VACANT

F. AUSTIN & SONS (LONDON), LTD., require at their Hertfordshire works, Metallurgical Chemist competent in analysis of copper-base alloys. Knowledge of manufacture of these alloys essential. Details of experience, &c., to Managing Director, Atlas Wharf, London, E.9.

GRADUATE METALLURGIST or chemist required for work on protective coatings. Excellent scope for an imaginative and resourceful man with good personality and ability to express himself well. Further particulars from the Director, The Zinc Development Association, 34 Berkeley Square, London, W.1.

METALLURGIST required for Research and Development work on new ultra-high-strength alloys. Applicants should be of degree standard with experience of ferrous metals and a sound knowledge of heat-treatment and working processes. The position offers much scope for original thought and work. Please write to the Personnel Manager, The Fairey Aviation Co., Ltd., Hayes, Middlesex, giving details of education and subsequent experience.

METALLURGIST

Reynolds T.I. Aluminium Limited require a METALLURGIST at their Resolven Plant. Duties will consist of investigation and development work in the Foundry and Rolling Mill Divisions; some experience in the production of Light Metals is desirable but not essential. Candidates should be qualified to degree standard or equivalent. An attractive salary will be offered commensurate with age, experience and qualifications. Staff superannuation scheme is operated and staff canteen facilities are available.

Apply stating age and experience to Personnel Manager, Reynolds T.I. Aluminium, Ltd., Rheola Works, Resolven, Glam., S. Wales.

THE COLLEGE OF AERONAUTICS

Applications are invited from candidates with suitable academic qualifications and experience for the following appointments in the DEPARTMENT OF AIRCRAFT MATERIALS:

LECTURER in NON-METALLIC MATERIALS. Candidates should have a good background in physics with experience of research as supervision of student thesis work is involved. Excellent facilities exist for personal research. Salary in scale £900 × £50 to £1350 × £75 to £1650 p.a., with superannuation under F.S.S.U. and family allowance.

DEMONSTRATOR in PHYSICAL or INDUSTRIAL METALLURGY, to assist in the laboratory teaching and research work. Salary in scale £600 × £25 to £1000 p.a. with superannuation under F.S.S.U., and family allowance. Subsequent promotion to Lecturer is possible if suitably qualified.

RESEARCH FELLOW in PHYSICAL METALLURGY or METAL PHYSICS, to work in the field of deformation and dynamic stressing. Considerable research facilities exist and the successful candidate will be free to choose any line of study related to the interests of the College. Previous research experience is essential. Salary in range £650 to £900 p.a. (Research Fellowship) or £1000 to £1200 p.a. (Senior Research Fellowship) with superannuation under F.S.S.U. and family allowance.

LABORATORY ENGINEER, to be responsible for the technical equipment in the Department, and the design and construction of research apparatus, and to advise generally on technical development. Salary in scale £700 × £25 to £850 × 25 to £1000 p.a., with Local Government Superannuation.

In all cases the commencing salary within the prescribed scale will depend upon age, qualifications and experience. Consideration will be given to candidates' housing requirements. Applications giving full particulars and the names of three referees should be forwarded to the Recorder, The College of Aeronautics, Cranfield, Bletchley, Bucks. Further particulars available.